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93. Proposed by JOHN R. JEFFREY, Student in Ohio State University, Columbus, Ohio.

Solve the following differential equation :

$$(1-x^2) \frac{d^2y}{dx^2} - x \frac{dy}{dx} + y = 2x, \text{ when } x < 1.$$

94. Proposed by ALOIS F. KOVARIK, Instructor in Mathematics and Physics, Decorah Institute, Decorah, Ia.

Find the minimum isosceles triangle that can be described about a given ellipse, having its base parallel to the major axis. [Ex. 16, page 166, *Rice and Johnson's Differential Calculus*.

*** Solutions of these problems should be sent to J. M. Colaw not later than August 10.

MECHANICS.

91. Proposed by CHARLES C. CROSS, Whaleyville, Va.

The bow of a boat which is a inches wide is inclined at an angle α . When in motion in perfectly calm water the water was found to rise b inches on the bow. Required the velocity of the boat.

92. Proposed by WALTER H. DRANE, Graduate Student, Harvard University, Cambridge, Mass.

A particle, starting at the vertex, slides down a smooth parabolic curve. Prove that in order to leave the curve at the extremity of the latus rectum, the initial velocity of the particle must be $pg[1/2-1]$ where p is semi-latus rectum.

*** Solutions of these problems should be sent to B. F. Finkel not later than August 10.

AVERAGE AND PROBABILITY.

75. Proposed by F. P. MATZ, M. Sc., Ph. D., Professor of Mathematics and Astronomy, Irving College, Mechanicsburg, Pa.

Find the mean area of all plane rectilinear right triangles having a constant perimeter p .

76. Proposed by F. P. MATZ, M. Sc., Ph. D., Professor of Mathematics and Astronomy, Irving College, Mechanicsburg, Pa.

In a given ellipse, the extremities of a focal chord are joined with the center. Find the average area of the triangle thus formed.

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MISCELLANEOUS.

79. Proposed by S. HART WRIGHT, A. M., Ph. D., Penn Yan, N. Y.

In latitude $42^\circ 30' N. = \lambda$, a tree 100 feet long $= \alpha$, leans in the direction $S. 60^\circ W. = \beta$, with an angle of elevation with the level ground, of $30^\circ = \gamma$. The sun's declination being $1^\circ 36' 24'' N. = \delta$, in what direction will the shadow of the tree point, when the sun is on the meridian?

80. Proposed by SYLVESTER ROBINS, North Branch Depot, N. J.

Exhibit ten initials in that infinite series of integral, rational rhombuses wherein the area of every term is one unit less than the square of its side.

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EDITORIALS.

It should have been stated in our last issue that the excellent portrait of Sophus Lie was furnished us through the kindness of Dr. Halsted.

The University of Wisconsin is offering for the Academic year beginning 1899, a very excellent course of Graduate Study in Electrical Engineering.

We offer again in this issue a prize of \$2.50 for the best solution of problem 104 in algebra. Any person under twenty-one years of age is eligible to compete for the prize.

Advanced sheets of a School Algebra, by Drs. Fisher and Schwatt of the University of Pennsylvania have just reached us. A further notice of the book will be given in the June number of the MONTHLY.

Dr. George Bruce Halsted has been invited to present a Report on Progress in non-Euclidean Geometry at the coming Columbus meeting of the American Association for the Advancement of Science. Dr. Halsted has accepted the invitation and will commence soon the preparation of the report, which is to be quite exhaustive.

During the year 1899-1900, Drury College will offer the following electives in Mathematics: Advanced Integral Calculus, Differential Equations, Projective Geometry, Analytical Mechanics, and Theory of Functions.

The Register and Eleventh Official Announcement of Clark University has just reached us. The following are some of the Courses offered in Mathematics for the year 1899-1900: Differential Geometry, Algebraic Invariants, Analytical Geometry of Higher Surfaces and Twisted Curves, Elliptic Functions, Differential equations, and Calculus of Variations, Finite Continuous Groups, and Theory of Numbers.

The following are some of the advanced courses of Mathematics offered for the year 1899-1900 at the University of Chicago: Twisted Curves and Surfaces, Associate Professor Maschke; Projective Geometry, Professor Moore; Theory of Invariants, Professor Bolza; Continuous Groups, Professor Bolza; Theory of Functions of a Complex Variable, Professor Moore and Associate Professor Maschke; Elliptic Functions, Professor Bolza; Hyperelliptic Functions, Professor Bolza; Abstract Groups, Associate Professor Maschke; Elliptic Modular Functions, Professor Moore; Theory of Substitution, Professor Moore; Theory of Numbers, Assistant Professor Young, etc., etc.